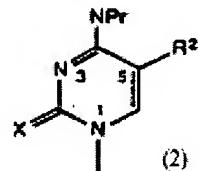
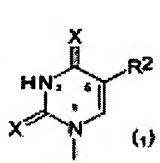


This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-127 (Canceled).

128 (Withdrawn). An oligomer comprising at least two nucleomonomers and pharmaceutically acceptable salts thereof wherein at least one of said nucleomonomers comprises a base of formula (1) or (2):

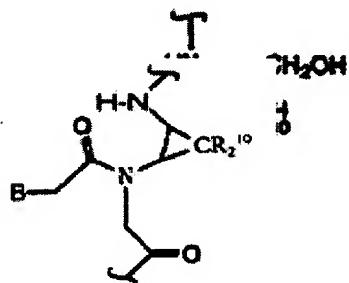
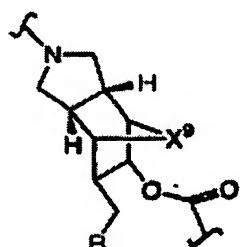


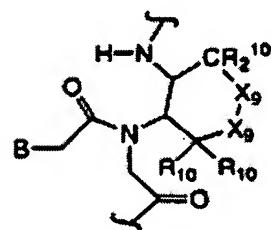
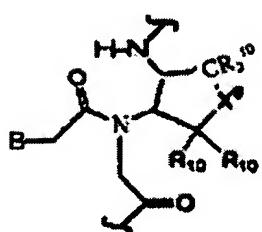
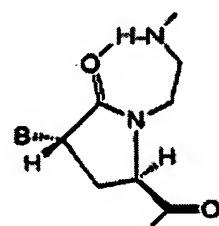
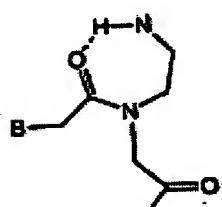
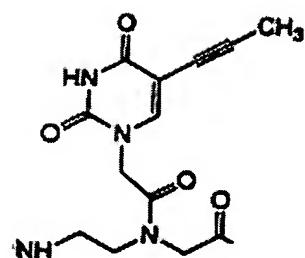
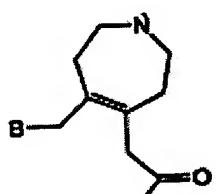
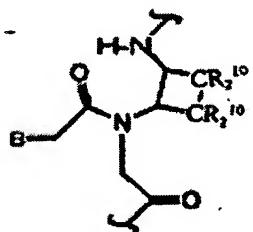
wherein each X is independently O or S;

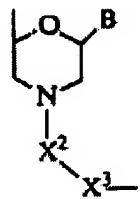
R^2 is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is $(H)_2$ or a protecting group,

wherein said oligomer includes at least one unit having one of the following formulas:







wherein

B is a base, provided that at least one B is a base of formula (1) or (2);

X⁹ is S, O, SO, SO₂, CH₂, CHF, CF₂, or NR₁₀, provided that adjacent X⁹ are not both O;

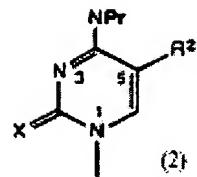
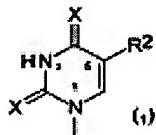
R¹⁰ is, independently, H, F, OH, OCH₃, CH₃, or CH-lower alkyl;

X² is CO, CS or SO₂; and

X³ is O, S, CH₂, CF₂, CHF, NH, NCH₃.

Claims 129-130 (Canceled).

131. (Withdrawn) An oligomer comprising at least one base of formula (1) or (2):



wherein each X is independently O or S;

R^2 is a group comprising at least one pi bond connected to the carbon atom attached to the base;

Pr is $(\text{H})_2$ or a protecting group; and

at least one conjugate linked thereto.

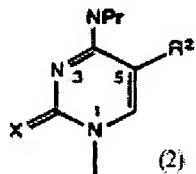
132. (Withdrawn) The oligomer of claim 131 wherein said conjugate is a radioactive conjugate, a fluorescent conjugate, or an enzyme conjugate.

133. (Withdrawn) The oligomer of claim 131 wherein said conjugate is a fluorescent conjugate.

134. (Withdrawn) The oligomer of claim 131 wherein said conjugate is selected from the group consisting of fluorescien, resorufin, rhodamine, BODIPY, texas red, alkaline phosphatase, horseradish peroxidase, biotin, antibodies, antibody fragments, transferrin and the HIV Tat protein.

Claims 135 - 138 (Canceled).

139. (Previously Presented) A method of detecting the presence, absence or amount of a particular single-stranded DNA or RNA or a particular target duplex in a sample comprising:
selecting an oligomer having at least one base of formula (2):



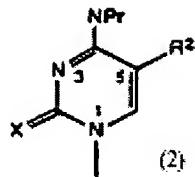
wherein each X is independently O or S;

R² is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)₂ or a protecting group; and
using said oligomer to detect said DNA, RNA or target duplex.

140. (Previously Presented) The method of 139 wherein said oligomer is used for quantitating the amount of said DNA, RNA or target duplex in said sample.

141. (Previously Presented) A method of performing a polymerase chain reaction (PCR) to amplify a target sequence comprising including in a PCR assay mixture an oligomer having at least one base of formula (2):



wherein each X is independently O or S;

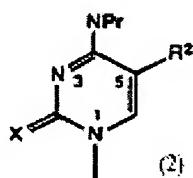
R² is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)₂ or a protecting group; and

effecting a polymerase chain reaction to amplify said target sequence.

142. (Previously Presented) The method of claim 141 further including a Taq polymerase in said PCR assay mixture.

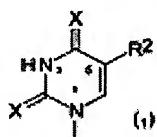
143. (Previously Presented) A method of performing a nucleic acid amplification protocol to amplify a target nucleic acid comprising including in an assay mixture an oligomer having at least one base of formula (2):



wherein each X is independently O or S;
 R^2 is a group comprising at least one pi bond connected to the carbon atom attached to the base; and
Pr is $(H)_2$ or a protecting group; and
effecting a protocol to amplify said target nucleic acid.

144. (Previously Presented) A method of claim 143 wherein said protocol includes hybridization of said oligomer to said target nucleic acid.

145. (Amended Herein) A method of detecting the presence, absence or amount of a particular single-stranded DNA or RNA or a particular target duplex in a sample comprising:
selecting an oligomer having at least one base of formula (1):



wherein each X is independently O or S;
 R^2 is cyano; C_{2-12} 1-alkenyl; C_{2-12} 1-alkynyl; a C_{2-12} heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4-imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl;

2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C₁₋₁₀ alkyl, C₁₋₁₀ haloalkyl (with 1-6 halogen atoms), or C₁₋₁₀ heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

Pr is (H)₂ or a protecting group; and

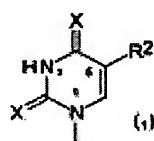
using said oligomer to detect said DNA, RNA or target duplex.

146. (Previously Presented) The method of 145 wherein said oligomer is used for quantitating the amount of said DNA, RNA or target duplex in said sample.

147 (Previously Presented). The method of claim 145 wherein R² is C₂₋₈ 1-alkenyl.

148 (Previously Presented). The method of claim 145 wherein R² is C₂₋₈ heteroaromatic.

149. (Amended Herein) A method of performing a polymerase chain reaction (PCR) to amplify a target sequence comprising including in a PCR assay mixture an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R² is cyano; C₂₋₁₂ 1-alkenyl; C₂₋₁₂ 1-alkynyl; a C₂₋₁₂ heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4-imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl; 2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C₁₋₁₀ alkyl, C₁₋₁₀ haloalkyl (with 1-6 halogen atoms), or C₁₋₁₀ heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

Pr is (H)₂ or a protecting group; and

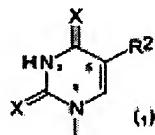
effecting a polymerase chain reaction to amplify said target sequence.

150. (Previously Presented) The method of claim 149 further including a Taq polymerase in said PCR assay mixture.

151 (Previously Presented). The method of claim 149 wherein R² is C₂₋₈ 1-alkenyl.

152 (Previously Presented). The method of claim 149 wherein R² is C₂₋₈ heteroaromatic.

153. (Amended Herein) A method of performing a nucleic acid amplification protocol to amplify a target nucleic acid comprising including in an assay mixture an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R² is cyano; C₂₋₁₂ 1-alkenyl; C₂₋₁₂ 1-alkynyl; a C₂₋₁₂ heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4-imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl; 2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C₁₋₁₀ alkyl, C₁₋₁₀ haloalkyl (with 1-6 halogen atoms), or C₁₋₁₀ heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

Pr is (H)₂ or a protecting group; and

effecting a protocol to amplify said target nucleic acid.

154. (New) A method of claim 153 wherein said protocol includes hybridization of said oligomer to said target nucleic acid.

155 (New). The method of claim 153 wherein R² is C₂₋₈ 1-alkenyl.

156 (New). The method of claim 153 wherein R² is C₂₋₈ heteroaromatic.